

STOCKPILE REPORT

to the Congress

January - June 1968

**EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF EMERGENCY PLANNING
WASHINGTON, D. C. 20504**

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OFFICE OF THE DIRECTOR

October 18, 1968

Honorable Hubert H. Humphrey
President of the Senate

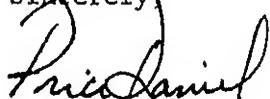
Honorable John W. McCormack
Speaker of the House of Representatives

Sirs:

Pursuant to Section 4 of the Strategic and Critical Materials Stock Piling Act, Public Law 520, 79th Congress, there is presented herewith the semiannual report to the Congress on the strategic and critical materials stock-piling program for the period January 1 to June 30, 1968.

A statistical supplement to this report was transmitted to you on September 17, 1968.

Sincerely,



Price Daniel
Director

CONTENTS

	Page
Summary	vi
Introduction	1
Supply-Requirements Studies	1
Summary of Government Inventories of Strategic and Critical Materials	1
Status of Stockpile Objectives	3
Summary of Government Inventories, Objectives, Excesses and Balance of Disposal Authorizations (Basic Stockpile Materials), June 30, 1968	4
Other Materials in Government Inventories	6
Summary of Government Inventories and Balance of Disposal Authorizations Covering Materials for Which There Are No Stockpile Objectives, June 30, 1968	7
National Stockpile Activities	8
Procurement and Upgrading	8
Disposal Program Activity	10
Disposals of Strategic and Critical Materials (Table)	12
Legislation Relative to Stockpile Disposals	14
Notes on Strategic and Critical Materials	17
Activities of the General Services Administration	20
Activities of the Department of Commerce	21
Activities of the Department of State	23
Activities of the Department of Agriculture	24
Activities of the Department of the Interior	24
Reports Issued by the Bureau of Mines	26
Reports Issued by the U.S. Geological Survey	27
Expenditures of Stockpile Funds, by Type, Cumulative and for Second Half Fiscal Year 1968	28
Total Obligations and Expenditures of Stockpiling Funds, Cumulative and by Fiscal Period Through June 30, 1968	29
Status of Obligational Operations as of June 30, 1968	30

SUMMARY

This report covers the principal activities in stockpile planning and management carried out during the period January 1 through June 30, 1968, under the provisions of Public Law 520 (79th Congress), the Strategic and Critical Materials Stock Piling Act.

Strategic materials on hand in all Government inventories as of June 30, 1968, amounted to \$7.0 billion at acquisition cost or \$6.9 billion at estimated market value. Of the total materials in Government inventories, \$3.6 billion at cost or \$3.3 billion at estimated market value are considered to be in excess of stockpile objectives. Comparison of the estimated market value of the objectives established and the extent to which materials on hand in all Government inventories meet these objectives are shown in the bar chart on page 3.

Disposal sales of excess materials from Government inventories continued at a low level during the January-June period, when the anticipated upswing in commercial demand for various materials failed to materialize. Although sales totaling \$122.1 million for the six-month period showed an increase over the \$85.3 million for July-December 1967, the total for the fiscal year amounting to \$207.4 million was the lowest for any fiscal year since 1964. Cumulative sales commitments by the General Services Administration for the disposal of surplus materials as of June 30, 1968, totaled approximately \$2.9 billion at sales value. (See Figures 1 and 2, page 19).

INTRODUCTION

SUPPLY-REQUIREMENTS STUDIES

Due to a continuing reevaluation of the basic policies governing the stockpile computation of objectives, work on conventional war supply-requirements analyses for specific materials was suspended late in FY 1968. Because of this delay, the economic model developed for use in these analyses is being modified and extended to cover later years.

Projects to prepare for a new review of nuclear war stockpile objectives are underway. These include new analyses of the possible effects of a nuclear attack on the U.S. in the 1970's, plans to utilize the new large scale inter-industry tables that will be issued by the Office of Business Economics, Department of Commerce, late in 1968, and the development of updated usage factors for various materials.

SUMMARY OF GOVERNMENT INVENTORIES OF STRATEGIC AND CRITICAL MATERIALS

As of June 30, 1968, the strategic materials held in all Government inventories amounted to \$7.0 billion at acquisition cost or \$6.9 billion at estimated market value. Of this total, \$4.5 billion at cost was in the National Stockpile, \$1.5 billion in the Supplemental Stockpile, \$1.0 billion in the Defense Production Act inventory, and \$2.7 million in the Commodity Credit Corporation inventory. Of the total materials in Government inventories, approximately \$3.6 billion at cost or \$3.8 billion at estimated market value are considered to be in excess of stockpile objectives. Over 83 percent of the market value of the total current excess (\$3.3 billion) is made

up of 12 materials consisting of aluminum, bauxite (Jamaica and Surinam), metallurgical grade chromite, cobalt, industrial diamond stones, lead, metallurgical grade manganese, nickel, rubber, tin, tungsten, and zinc.

The following table is a summary of the total value of all materials carried in Government inventories including those with quantities in excess of established stockpile objectives. It indicates the acquisition cost and estimated market value of materials with inventories meeting stockpile objectives, and materials with inventories excess to stockpile objectives.

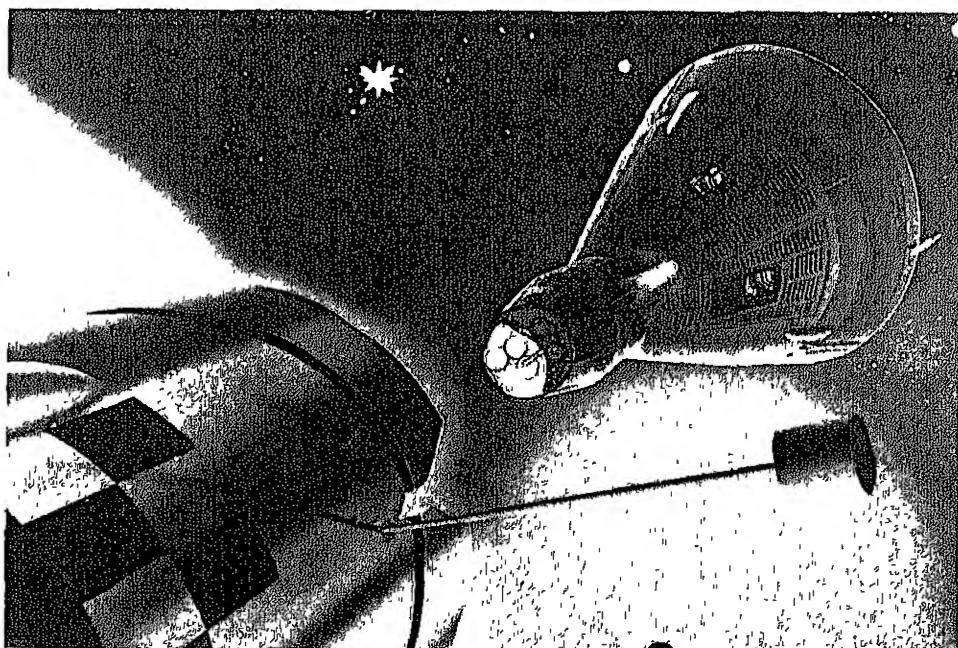
**SUMMARY OF GOVERNMENT INVENTORIES OF
STRATEGIC AND CRITICAL MATERIALS**

June 30, 1968

	Acquisition Cost	Market Value ¹
I. Total Inventories		
National Stockpile	\$4,525,267,800	\$4,909,801,100
Supplemental Stockpile	1,456,366,500	1,416,811,300
Defense Production Act	977,936,900	591,628,100
Commodity Credit Corporation	2,670,900	3,125,400
Total on Hand	6,962,242,100	6,920,860,900
On Order	85,215,400	94,528,600
II. Inventories Within Objective		
Total on Hand	8,316,394,600	3,619,665,900
III. Inventories Excess to Objective		
Total on Hand	3,645,847,500	3,300,695,000

¹ Market values are computed from prices at which similar materials are being traded currently; or, in the absence of current trading, an estimate of the price which would prevail in commercial markets. The market values are generally unadjusted for normal premiums and discounts relating to contained qualities. The market values do not necessarily reflect the amount that would be realized at time of sale.

Source: General Services Administration



The Gemini-5 spacecraft moves through space toward a rendezvous with a 76-pound satellite—called a rendezvous evaluation pod. Many parts of the structure of the Gemini were made of magnesium. The pressure cover for the rendezvous radar was a magnesium-thorium alloy.

STATUS OF STOCKPILE OBJECTIVES

The bar chart below shows the estimated market value of the objectives established and the extent to which materials on hand in all Government inventories (National Stock-

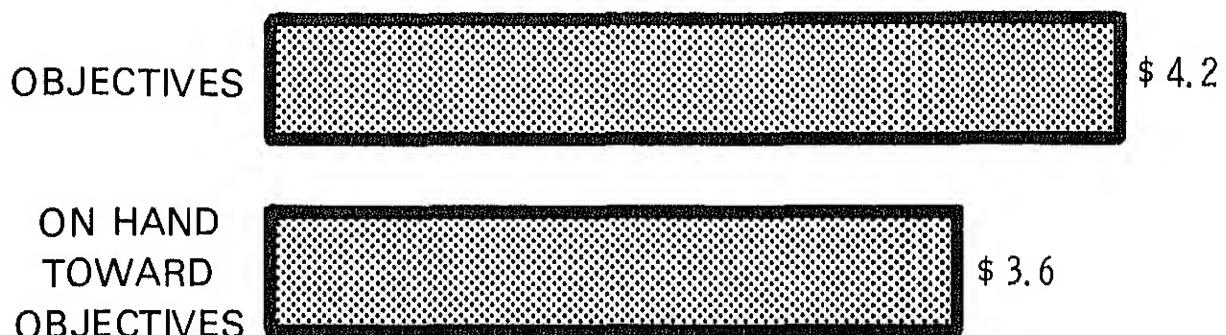
pile, Supplemental Stockpile, DPA, and CCC) meet these objectives. The figures do not include the quantities on hand in all Government inventories which are in excess of stockpile objectives (\$3.3 billion).

STATUS OF STOCKPILE OBJECTIVES

AS OF JUNE 30, 1968

(In Billions of Dollars)

Market Value



The objective, inventory, excess, and balance of disposal authorizations, for each material on the Strategic and Critical Materials List, are shown in the following summary. As of June 30, 1968, total quantities of stockpile grade materials on hand and on order for all Government-owned inventories were in excess or equal to the stockpile objectives for 66 of the 77 basic materials on the List of Strategic and Critical Materials for Stockpiling. In addition to the specification grade materials, Government inventories contain nonspecification grades not credited to stockpile objectives. Much of the nonspecification grade materials in the National Stockpile was acquired by the transfer of Government-owned surpluses to the stockpile after World War II while others were accepted as contract termi-

nation inventories. Several were of specification grade when acquired but no longer qualify due to changes in industry practices and other technological advances. Disposal action for practically all excesses shown in the following summary has been authorized by the Congress or, in the case of DPA materials, by the OEP. There are, however, a few materials for which disposal has been deferred pending new supply-requirements studies or improvement in market conditions. Certain technologically obsolete grades of materials now in inventory will be transferred to the disposal list as soon as new acquisitions are made of currently standard qualities. Inventory changes during the report period were due primarily to disposals, or to reclassification and other adjustments in the inventories.

**SUMMARY OF GOVERNMENT INVENTORIES, OBJECTIVES,
EXCESSES AND BALANCE OF DISPOSAL AUTHORIZATIONS**

**Basic Stockpile Materials
As of June 30, 1968**

(Market Value—\$ Millions)

Commodity	Unit	Objective	Total Inventory ^{1,2}	Market Value	Excess ²	Market Value	Balance of Disposal Authorization
1. Aluminum	ST	450,000	1,480,512	\$769.9	1,030,512	535.9	1,015,827 ³
2. Aluminum oxide, fused	ST	300,000	429,021	56.2	129,021	16.6	128,955
3. Antimony	ST	25,500	49,346	42.6	23,846	20.2	2,593
4. Asbestos, amosite	ST	40,000	65,685	13.9	25,685	5.4	14,801
5. Asbestos, chrysotile	ST	13,700	15,504	6.8	5,048 ⁴	1.1	1,706
6. Bauxite, metal, Jamaica	LDT	5,000,000	8,858,881	103.1	3,858,881 ⁵	44.9	714,000
7. Bauxite, metal, Surinam	LDT	5,300,000	7,889,967	121.1	2,589,967 ⁵	39.8	0
8. Bauxite, refractory	LCT	173,000	205,892	8.6	32,892	1.4	0
9. Beryl	ST	28,000	47,806	73.9	19,806 ⁶	16.5	0
10. Bismuth	LB	2,400,000	3,529,306	14.1	1,129,306	4.5	910,000
11. Cadmium	LB	5,100,000	18,522,181	84.2	8,422,181 ⁷	21.3	3,835,790
12. Castor oil	LB	22,000,000	90,913,791	18.4	68,913,791	18.1	21,948,064
13. Celestite	ST	10,300	43,847	1.0	33,547	.6	28,811
14. Chromite, chemical	SDT	600,000	1,059,301	27.8	459,301 ⁸	11.8	116,458
15. Chromite, metallurgical	SDT	2,970,000	6,054,458	419.4	3,084,458 ⁸	273.6	1,155,463
16. Chromite, refractory	SDT	1,425,000	1,426,671	21.7	1,671	.02	0
17. Cobalt	LB	42,000,000	92,499,531	160.9	50,499,531 ⁹	87.8	14,555,147
18. Columbium	LB	1,176,000	12,853,918	19.3	11,677,918 ⁹	16.8	4,224,659
19. Copper	ST	775,000	274,378	237.1	709	.7	0
20. Cordage fibers, abaca	LB	50,000,000	122,636,035	18.4	72,636,035	10.9	68,370,646
21. Cordage fibers, sisal	LB	200,000,000	227,500,102	17.1	27,500,102	2.1	15,746,202
22. Corundum	ST	2,500	1,964	.2	1,952 ⁵	.2	0
23. Diamond dies, small	PC	25,000	17,329	.7	442 ¹⁰	.02	0
24. Diamond, industrial bort	KT	24,700,000	42,611,479	98.2	17,911,479 ¹¹	39.5	0
25. Diamond, industrial stones	KT	16,500,000	26,724,275	863.3	10,224,275 ⁸	138.2	1,760,650
26. Feathers and down	LB	3,000,000	3,588,698	12.5	588,698	1.1	0
27. Fluorspar, acid grade	SDT	540,000	1,133,366	54.4	243,365 ^{8,12}	11.2	20,584
28. Fluorspar, metallurgical	SDT	850,000	412,248	15.9	0	0	0
29. Graphite, natural, Ceylon	ST	5,500	5,886	1.3	886	.09	0

Commodity	Unit	Objective	Total Inventory ^{1 2}	Market Value	Excess ²	Market Value	Balance of Disposal Authorization
30. Graphite, natural, Malagasy	ST	18,000	38,310	3.8	15,310	1.8	15,286
31. Graphite, other	ST	2,800	4,850	1.1	2,050	.4	2,009
32. Iodine	LB	8,000,000	8,011,840	9.5	11,840	.01	0
33. Jewel bearings	PC	57,500,000	54,729,525	23.0	14,726,698 ¹³	6.2	0
34. Kyanite, Mullite	SDT	4,800	4,820	.5	1,047	.09	0
35. Lead	ST	0	1,164,832	302.9	1,164,832 ⁴	302.9	46,347
36. Magnesium	ST	90,000	145,805	104.8	55,305 ⁵	89.7	0
37. Manganese, battery, natural	SDT	80,000	308,839	18.2	228,839 ¹	18.5	0
38. Manganese, battery, synthetic dioxide	SDT	6,700	24,823	12.2	18,123	8.9	17,972
39. Manganese ore, chemical A	SDT	68,500	146,914	13.0	78,414 ⁴	6.9	0
40. Manganese ore, chemical B	SDT	64,000	100,838	5.0	36,838 ⁴	1.8	0
41. Manganese, metallurgical	SDT	7,900,000	12,859,090	424.2	4,959,090 ¹¹	173.1	2,573,681
42. Mercury	FL	200,000	200,314	101.2	814 ¹⁰	.2	0
43. Mica, muscovite block, St./better	LB	6,000,000	15,438,383	61.9	8,597,683 ¹⁵	21.4	7,286,872
44. Mica, muscovite film, 1 & 2 quality	LB	2,000,000	1,469,002	17.0	57,486	.06	6,420
45. Mica, muscovite splittings	LB	22,200,000	44,375,223	53.5	22,175,223	26.6	22,170,028
46. Mica, phlogopite block	LB	17,000	218,224	.06	201,505	.04	201,520
47. Mica, phlogopite splittings	LB	1,800,000	5,027,053	8.0	3,727,053	6.0	3,727,687
48. Molybdenum	LB	40,000,000	56,097,695	106.1	16,097,695	28.5	18,262,401
49. Nickel	ST	20,000	71,253	134.6	51,253 ⁵	97.0	0
50. Opium	AVLB	143,000	147,105	12.3	5,591	.8	1,954
51. Platinum group, iridium	TrOz	17,000	14,121	2.6	184 ¹⁶	.08	0
52. Platinum group, palladium	TrOz	1,800,000	1,050,100	44.1	6,394 ¹⁶	.3	0
53. Platinum group, platinum	TrOz	335,000	450,076	50.2	115,076 ⁶	12.8	0
54. Pyrethrum	LB	25,000	67,044	.8	42,044 ⁷	.5	0
55. Quartz crystals	LB	650,000	5,336,645	56.6	4,686,645	49.1	4,667,825
56. Quinidine	OZ	2,000,000	1,800,438	1.9	0	0	0
57. Quinine	OZ	4,130,000	3,548,161	2.8	0	0	0
58. Rare earths	SDT	3,000	15,058	5.5	12,058 ¹⁷	4.4	6,821
59. Rubber	LT	130,000	441,886	200.4	311,886	141.5	305,299
60. Rutile	SDT	200,000	50,568	6.2	0	0	0
61. Sapphire and Ruby	KT	18,000,000	16,805,597	.2	0	0	0
62. Selenium	LB	475,000	474,774	2.1	0	0	0
63. Shellac	LB	8,800,000	12,622,199	4.0	4,387,989	.8	1,289,478
64. Silicon carbide, crude	ST	30,000	196,453	48.0	166,453 ⁴	36.5	0

Commodity	Unit	Objective	Total Inventory ^{1,2}	Market Value	Excess ²	Market Value	Balance of Disposal Authorization
65. Silver -----	TrOz	165,000,000	165,000,000	392.9	0	0	0
66. Sperm oil -----	LB	23,400,000	23,481,724	4.1	81,724 ⁷	.01	0
67. Talc, steatite block & lump -----	ST	200	1,244	.4	1,044	.3	1,044
68. Tantalum -----	LB	3,400,000	3,962,299	38.8	562,299 ¹⁸	3.2	0
69. Thorium oxide -----	LB	500,000	500,000 ¹⁰	2.1 ¹⁰	0	0	0
70. Tin -----	LT	200,000	259,402	894.8	59,402	204.9	58,769
71. Titanium sponge -----	ST	37,500	29,782	71.3	0	0	9,231
72. Tungsten -----	LB	44,000,000	186,260,434	512.2	142,260,434	302.8	43,588,676
73. Vanadium -----	ST	1,500	5,609	26.4	4,109	19.1	3,972
74. Vegetable tannin, chestnut -----	LT	15,000	33,527	9.9	18,527	5.4	18,519
75. Vegetable tannin, quebracho -----	LT	86,000	195,534	89.4	109,534	22.1	107,430
76. Vegetable tannin, wattle -----	LT	15,000	38,886	6.6	23,886	4.1	22,388
77. Zinc -----	ST	0	1,167,891	315.3	1,167,891	315.3	88,866

¹ Total inventory consists of stockpile and nonstockpile grades.

² Includes quantities that have been committed for sale but not shipped, as well as quantities of nonstockpile quality materials which may be held toward objectives.

^a Committed for sale but undelivered under long-term contracts.

^b Balance of excess held due to market impact.

⁵ Balance of excess pending Congressional approval or submissslon to the Congress.

⁶ 9,888 short tons pending Congressional approval. Excess quantity includes 3,617 ST in beryllium copper master alloy and 3,160 ST in beryllium metal.

⁷ Balance of excess pending supply-requirements study.

⁸ Balance of excess deferred by the Congress due to market impact.

⁹ Unauthorized excess held pending completion of present sales program on DPA material.

¹⁰ Retained due to limited quantity.

¹¹ Deferred due to foreign situation.

¹² Excludes 250,000 ST credited to metallurgical fluospar.

¹³ Factory inspecting feasibility of reworking bearings to meet stockpile specifications.

¹⁴ Includes high carbon ferromanganese. Also includes quantity of metallurgical manganese ore retained for strategic reasons.

¹⁵ Excludes 840,700 LBS credited to mica, muscovite film.

¹⁶ Quantity being held for upgrading.

¹⁷ 5,200 ST pending supply-requirements study.

¹⁸ Materials required for upgrading.

¹⁹ Includes 500,000 LBS thorium nitrate credited to thorium oxide objective, \$2.1 million market value.

ABBREVIATIONS

FL	—Flask	OZ	—Ounce
KT	—Carat	PC	—Pico
LB	—Pound	SDT	—Short Dry Ton
LCT	—Long Calcined Ton	ST	—Short Ton
LDT	—Long Dry Ton	TrOz	—Troy Ounce
LT	—Long Ton		

OTHER MATERIALS IN GOVERNMENT INVENTORIES

Inventories covering materials that have been removed from the stockpile list, and

others for which there are no stockpile objectives, are indicated in the table below. These are not included in the previous tabulation.

**SUMMARY OF GOVERNMENT INVENTORIES AND BALANCE OF
DISPOSAL AUTHORIZATIONS COVERING MATERIALS FOR
WHICH THERE ARE NO STOCKPILE OBJECTIVES**

As of June 30, 1968

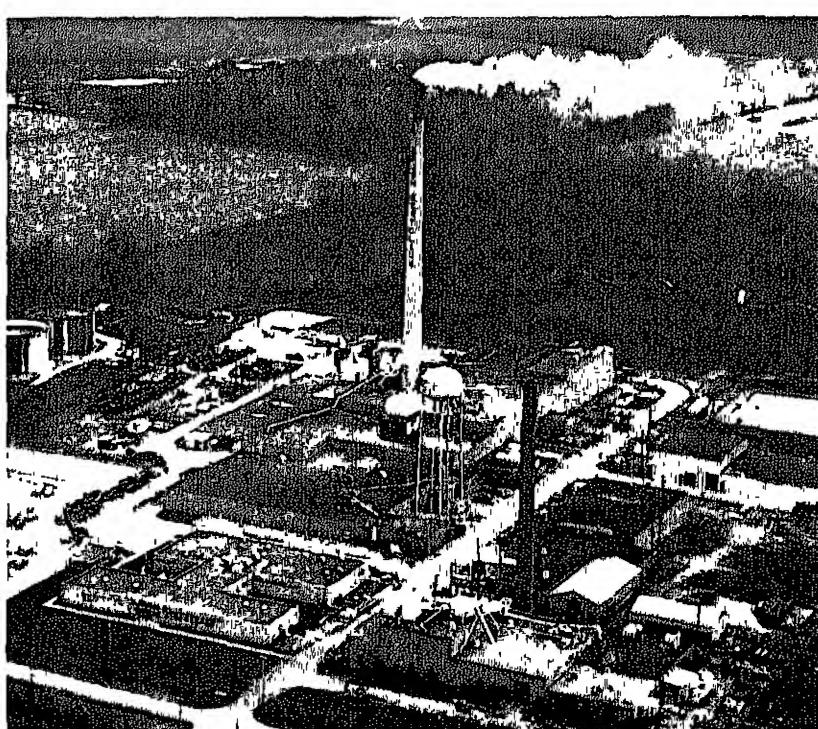
(Market Value—\$ Millions)

Commodity	Unit	Total Inventory ¹	Market Value	Balance of Disposal Authorizations
Antimonial lead	ST	10,836	\$ 3.1	9,243
Asbestos, crocidolite	ST	48,072	11.0	47,083
Colemanite	LDT	66,515	.6	0
Diamond tools	PC	64,178 ²	.8	0
Mica, muscovite block, St. B/Lower	LB	4,316,167	8.6	4,291,662
Mica, muscovite film, 3rd quality	LB	467,886	3.2	466,285
Platinum group metals, ruthenium	TrOz	11,999	.5	9,499
Silk noils	LB	38,186	.02	0
Talc, steatite ground	ST	3,900	.02	3,900
Thorium nitrate	LB	3,667,982 ³	15.3	3,138,861
Zirconium ore, baddeleyite	SDT	16,514	1.0	16,514
Zirconium ore, zircon	SDT	1,721	.002	1,721

¹ Includes quantities that have been committed but not shipped.

² Deferred due to market impact.

³ Includes 500,000 pounds credited to thorium oxide objective, \$2.1 million market value.



Beryllium production facility.

NATIONAL STOCKPILE ACTIVITIES

PROCUREMENT AND UPGRADING

The OEP Strategic Stockpile Procurement Directive for FY 1968, issued November 9, 1967, was amended March 6 and 19, 1968, to increase the quantity of silicomanganese for upgrading from 25,000 short tons to 75,000 short tons.

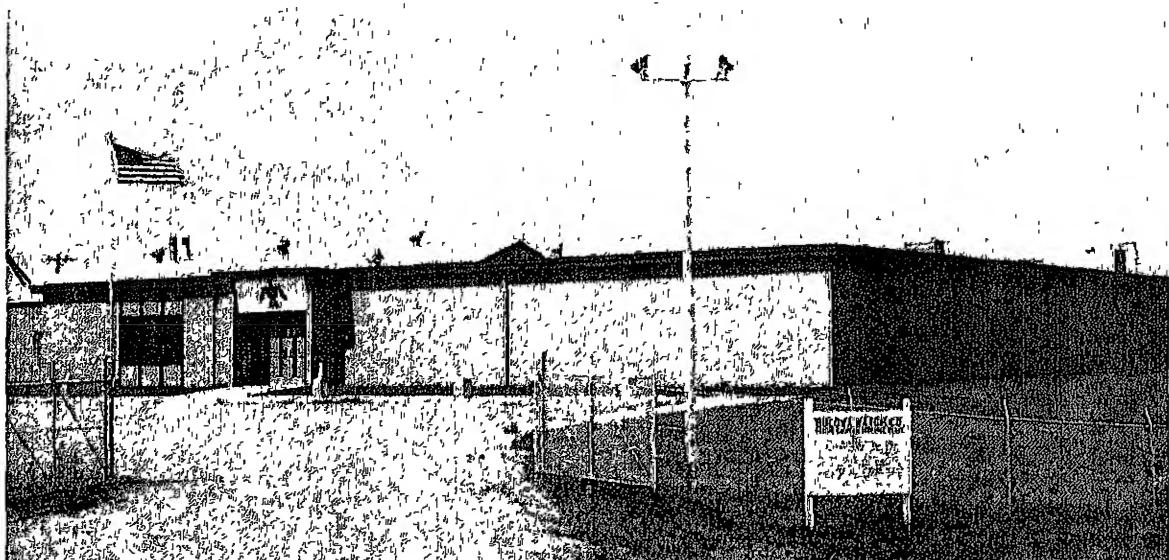
Procurement—Cash

Jewel bearings. The Government-owned William Langer Jewel Bearing Plant, Rolla, North Dakota, continued to produce jewel bearings for the National Stockpile and for defense contractors. The plant is operated by the Bulova Watch Company under a non-profit lease.

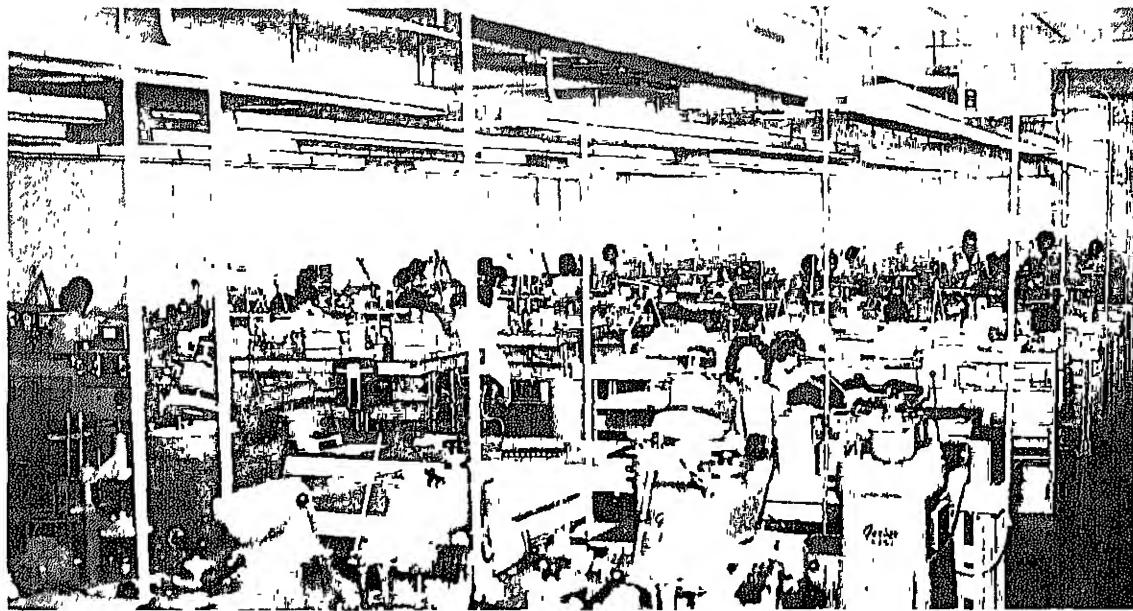
Legislation, approved August 8, 1968 (PL 90-469), authorizes the General Services Administration to provide for the operation of this Government-owned facility under a management type contract financed by a revolving fund. It is anticipated that this will result in more efficient operations and reduced prices for jewel bearings.

As a result of a fall-off in orders received by the plant from defense contractors in the latter part of 1967, the Defense Department initiated a survey to discover the reasons for

this and to determine any actions necessary to correct the situation. In November 1967, the General Accounting Office initiated a survey of the production, procurement, use and stockpiling of jewel bearings. The findings of these two surveys were very similar. The Department of Defense took corrective measures, including a letter to about 100 companies which are direct users of jewel bearings and are DOD prime contractors or subcontractors soliciting their cooperation in complying with Armed Services Procurement Regulations (ASPR) relating to the purchase and use of jewel bearings produced by the William Langer Jewel Bearing Plant and a Defense Procurement Circular stressing the need for full compliance by Defense contracting personnel and contract administration personnel with the ASPR provisions relating to jewel bearings. At the end of FY 1968, indications were that there would shortly be a major increase in orders placed on the plant. To meet these new orders, it will be necessary to operate the plant in FY 1969 at a rate approximately 33 percent greater than it operated during FY 1968. OEP has already authorized this increase in the operating rate.



Exterior of new building of William Langer Jewel Bearing Plant, Rolla, North Dakota.



New Swiss equipment in William Langer Jewel Bearing Plant at Rolla, North Dakota.

Upgrading Actions

Ferrocolumbium. On June 5, 1968, a contract was entered into for the conversion of Government-furnished columbium concentrates to ferrocolumbium containing not less than 186,000 pounds of columbium for delivery prior to December 2, 1968. Payment for services performed will be made in excess columbium concentrates which have been authorized previously for disposal.

Ferromanganese—Palladium. Under a contract entered into on August 31, 1967, for the acquisition of 200,000 troy ounces of palladium and the upgrading of manganese ore to 36,000 tons of medium carbon ferromanganese, deliveries through June 30, 1968, have totaled 200,060 troy ounces for palladium and 4,043 short tons for ferromanganese. The processing of manganese ore to ferromanganese is continuing under the contract with final delivery to be made not later than June 30, 1971.

Ferrotungsten. Bids were solicited on June 4, 1968, by formal advertising for the conversion of Government-furnished tungsten concentrates to 300,000 pounds contained tungsten in ferrotungsten. Bids received in response to this solicitation were not acceptable.

Morphine Sulfate on Order Prior Fiscal Year (1967). The processing of gum opium to morphine sulfate under a previous contract was completed by March 1968, with recovery of 32,751 pounds of morphine sulfate. Although there was a short-fall of 1,482 pounds of morphine sulfate under the contract, it was not deemed economical to contract for the additional quantity at this time. Morphine sulfate in the stockpile represents 96.4 percent of the objective.

Platinum Group—Iridium. The project for refining 184 troy ounces of subspecification iridium to refined iridium is being developed. Solicitation for bids for refining this material is planned for the early part of fiscal year 1969.

Platinum Group—Palladium. On June 17, 1968, a contract was entered into for the refining of 7,980 troy ounces of subspecification palladium declared excess by other Government agencies. Under the terms of the contract, the contractor will deliver to the Government by December 17, 1968, 7,687 troy ounces of refined palladium, 8 fine troy ounces of gold, and 85 fine troy ounces of silver recovered from the Government-furnished subspecifica-

tion palladium. Payment for the services performed will be made in excess materials from the stockpile.

Silicomanganese. On June 28, 1968, a contract was entered into for the conversion of Government-furnished manganese ore to 45,500 short tons of silicomanganese for delivery on or before June 15, 1970. Payment for services performed will be made with manganese ore which has been authorized for disposal from the stockpile. The manganese ore both for conversion and payment purposes will be taken from the same pile at Johnstown, Pennsylvania.

Tungsten Metal Powder Hydrogen Reduced. The contract for the conversion of Government-furnished tungsten to hydrogen reduced tungsten metal powder was completed early in 1968. A total of 254,277 pounds of tungsten contained in tungsten metal powder, hydrogen reduced, was delivered under this contract through April 12, 1968.

MATERIALS RESEARCH

Under a research grant supported by several agencies, including OEP, the National Academy of Sciences is preparing a series of reports on the growth probabilities of some of the more important stockpile materials. Through industry committees, expert industry knowledge is being brought to bear on technological changes taking place and their effect on the usage of these stockpile materials. Among the materials under study are titanium, beryl, silver, platinum, and tantalum. The data developed will be used by OEP in forthcoming projections of mobilization requirements and the determination of stockpile objectives.

DISPOSAL PROGRAM ACTIVITY

Disposal sales from all Government inventories continued at a slow pace during the January-June period, reflecting the relatively low industrial demand for most basic raw materials. Disposals included 38 of the 56 excess materials authorized and available for release from Government inventories, leaving 18 which accounted for no sales during the period.

SALES COMMITMENTS

Although sales commitments amounted to \$122.1 million and showed a 43 percent improvement over the previous six months (\$85.3 million), they were substantially below the \$262.2 million for January-June 1967. Of the total \$122.1 million sales, about \$23.0 million were for Government-use programs, including AID. Approximately \$59.1 million of the sales were from the National and Supplemental Stockpiles, \$15.5 million from the Defense Production Act inventory, and \$47.5 million from other inventories. Sales from other inventories included \$6.1 million of mercury from the Federal Property Act inventory, and \$40.9 million realized from sales of 54.6 million ounces of silver on behalf of the Treasury Department, which dollar amount was in excess of the U.S. monetary value of \$1.2929 per ounce of silver. The gross proceeds from silver sales during the six months period were \$111.5 million, bringing the total since the inception of the sales program in August 1967 to 97.7 million ounces, valued at \$188.8 million.

Sales commitments for the July-December 1967 period combined with the current six months bring the FY 1968 total to \$207.4 million, the lowest volume since FY 1964. Since the inception of the disposal program in 1958, sales commitments have amounted to \$2.9 billion. (Figures 1 and 2.)

A list of the materials sold during January-June is shown in the following table:

Figure 1

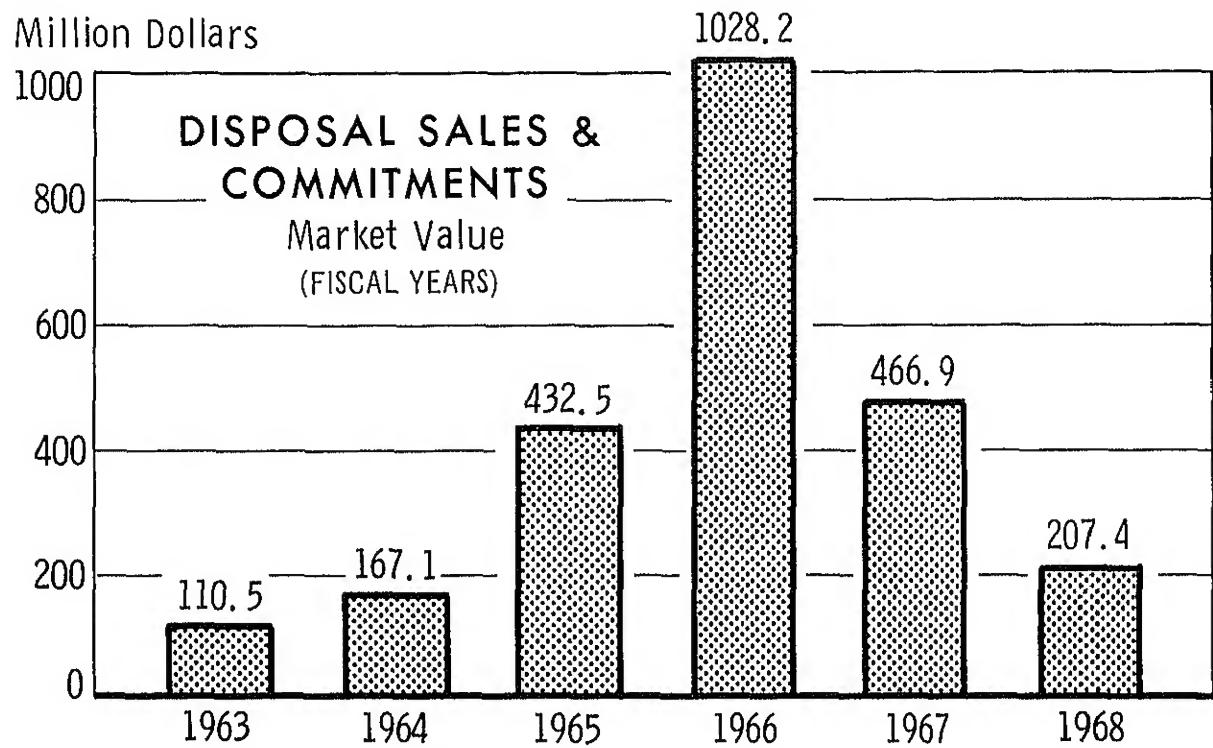
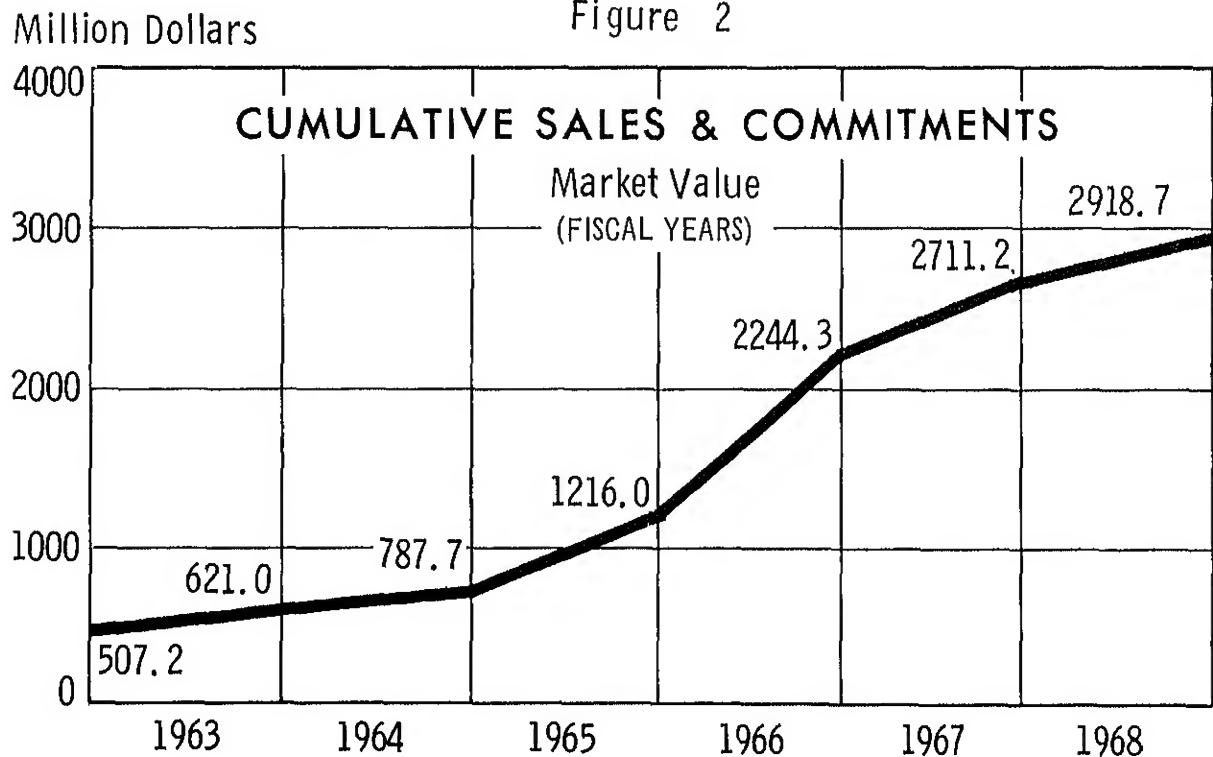


Figure 2



DISPOSALS OF STRATEGIC AND CRITICAL MATERIALS

January—June 1968

Material	Unit	Sales Commitments			
		Quantity	Government Use	Industrial Use	Total Sales Value
NATIONAL AND SUPPLEMENTAL STOCKPILE INVENTORIES:					
Aluminum	ST	24,363	\$	12,086,512	\$12,086,512
Aluminum oxide	ST	310		35,495	35,495
Antimony	ST	30		18,375	18,375
Asbestos, crocidolite	ST	190		36,100	36,100
Bauxite, refractory	LCT	916		38,472	38,472
Bismuth	LB	225,500		902,000	902,000
Cadmium	LB	176,002	263	446,108	446,371
Castor oil	LB	9,103,318		1,734,375	1,734,375
Chromite, metallurgical	SDT	12,610		295,667	295,667
Cordage fiber, abaca	LB	5,792,835	432,292	246,118	678,410
Cordage fiber, sisal	LB	19,669,612	(7,909)	1,418,685	1,410,776
Fluorspar, acid grade	SDT	300		3,000	3,000
Graphite, Malagasy	ST	75		8,625	8,625
Lead	ST	26,656	40,994	7,228,348	7,269,842
Manganese, metallurgical	SDT	369,889		7,271,269	7,271,269
Mica	LB	345,434		178,158	178,158
Molybdenum	LB	1,817,588		2,106,159	2,106,159
Platinum group metals:					
ruthenium	TrOz	2,500		100,000	100,000
Quartz crystals	LB	109,332		677,386	677,386
Rare earths	SDT	500		190,000	190,000
Rubber	LT	33,065	11,659,553		11,659,553
Shellac	LB	1,208,024		137,423	137,423
Tin	LT	1,860	6,071,599	120,064	6,191,663
Vegetable tannin:					
quebracho	LT	2,197	24,187	417,402	441,589
wattle	LT	1,499		255,973	255,973
Zinc	ST	18,193	4,441,215*	482,168	4,923,388
Total National and Supplemental Stockpiles		\$22,662,194	\$36,433,882	\$59,096,076	

*Represents AID sales of 16,135 short tons.

DISPOSAL OF STRATEGIC AND CRITICAL MATERIALS

January—June 1968 (Continued)

Material	Unit	Sales Commitments			Total Sales Value
		Quantity	Government Use	Industrial Use	
DEFENSE PRODUCTION ACT INVENTORY:					
Aluminum	ST	6,849	\$	3,460,200	\$ 3,460,200
Asbestos, chrysotile	ST	125		19,956	19,956
Cobalt	LB	2,961,903	184,461	4,864,206	5,048,667
Columbium	LB	1,159,087		1,487,564	1,487,564
Fluorspar, acid grade	SDT	2,500	118,750		118,750
Manganese, metallurgical	SDT	1,854		30,075	30,075
Manganese, battery, syn. diox.	SDT	150	73,500		73,500
Mica	LB	7,788		32,507	32,507
Tungsten	LB	2,115,325		5,285,892	5,285,892
Total DPA			\$ 376,711	\$15,180,400	\$ 15,557,111
OTHER					
Bauxite	LDT	110,000		\$ 500,000	\$ 500,000
Mercury	FL	11,125		6,063,453	6,063,453
Silver (fine)	TrOz			40,912,481 ¹	40,912,481
Total OTHER			=====	\$47,475,934	\$ 47,475,934
GRAND TOTAL			\$23,038,905	\$99,090,216	\$122,129,121

¹ Represents that portion of the total proceeds in excess of the U.S. monetary value based on \$1.2929 per ounce. 54,562,979 ounces of silver were sold at an average price of \$2.0427.

LEGISLATION RELATIVE TO STOCKPILE DISPOSALS

No legislation authorizing disposals from the National and/or Supplemental Stockpiles was enacted by the Congress during the January-June period.

The three disposal bills approved by the House on December 14, 1967, and referred to the Senate—beryl ore, magnesium, and platinum, valued at \$52.8 million—were passed by the Senate with amendments on April 26, 1968, and referred back to the House Armed Services Committee. The Senate amendments require that sales be made by competitive sealed bids to the highest responsible bidder. On June 29, 1968, the House rejected the Senate amendment to the beryl bill and referred it back to the Senate for further consideration.

(In early August, the beryl bill was passed by the Senate without amendment (PL 90-478).) The Senate-amended bills for the release of magnesium and platinum were awaiting further House Committee action on June 30.

As of June 30, four other disposal bills—castor oil, corundum, metallurgical bauxite and nickel—were also awaiting final action by the Congress. Of these, the castor oil and corundum bills submitted in August 1967, were formally introduced in the House on March 11, 1968. However, no hearings have been scheduled in the House as yet for either of these bills, or the privately introduced metallurgical bauxite bill. The fourth bill, involving nickel, valued at \$55.5 million as reported previously, was passed by the House on April 20, 1967, but was adversely reported by the Senate Armed Services Committee on June 8, 1967.

The status of disposal legislation as of June 30 is indicated in the following table:

Material	Unit	Quantity	Market Value (\$ Millions)	Date Enacted
Bismuth	LB	1,200,000	\$ 4.8	P.L. 90-153 11-24-67
Molybdenum	LB	15,000,000	24.3	P.L. 90-151 11-24-67
Rare Earths	SDT	7,640	3.4	P.L. 90-152 11-24-67
		Total	\$ 32.5	

Legislation Approved by the House and Pending Senate Committee Action

Material	Unit	Quantity	Market Value (\$ Millions)	Approved by House
Beryl	ST	9,888	\$ 4.2	H.R. 14367 6-28-68*
Nickel	LB	60,000,000	55.5	H.R. 5786 4-20-67**
		Total	\$ 59.7	

* House approved December 14, 1967; Senate passed with amendment April 26, 1968; House rejected amendment June 28, 1968. (In early August, the beryl bill was passed by the Senate without amendment (PL 90-478).)

** House approved April 20, 1967; Senate Armed Services Committee voted not to report bill on June 8, 1967.

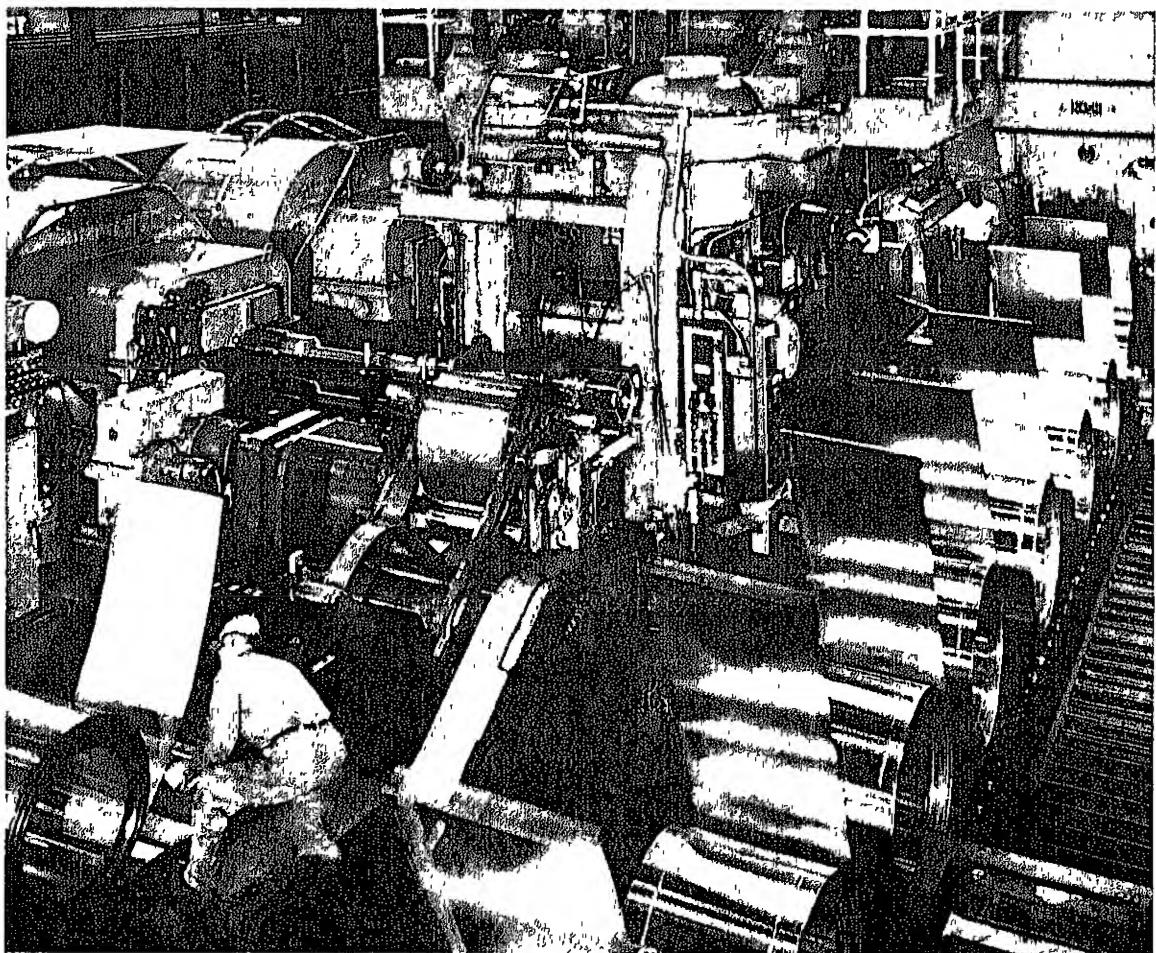
Legislation Passed by the House and Amended by the Senate
now Pending House Committee Action

Material	Unit	Quantity	Market Value (\$ Millions)	Approved by Senate
Magnesium	ST	55,000	\$ 35.8	H.R. 5785 4-26-68
Platinum	TrOz	115,000	12.8	H.R. 5789 4-26-68
		Total	\$ 48.6	

Legislation Introduced but Pending House Committee Action

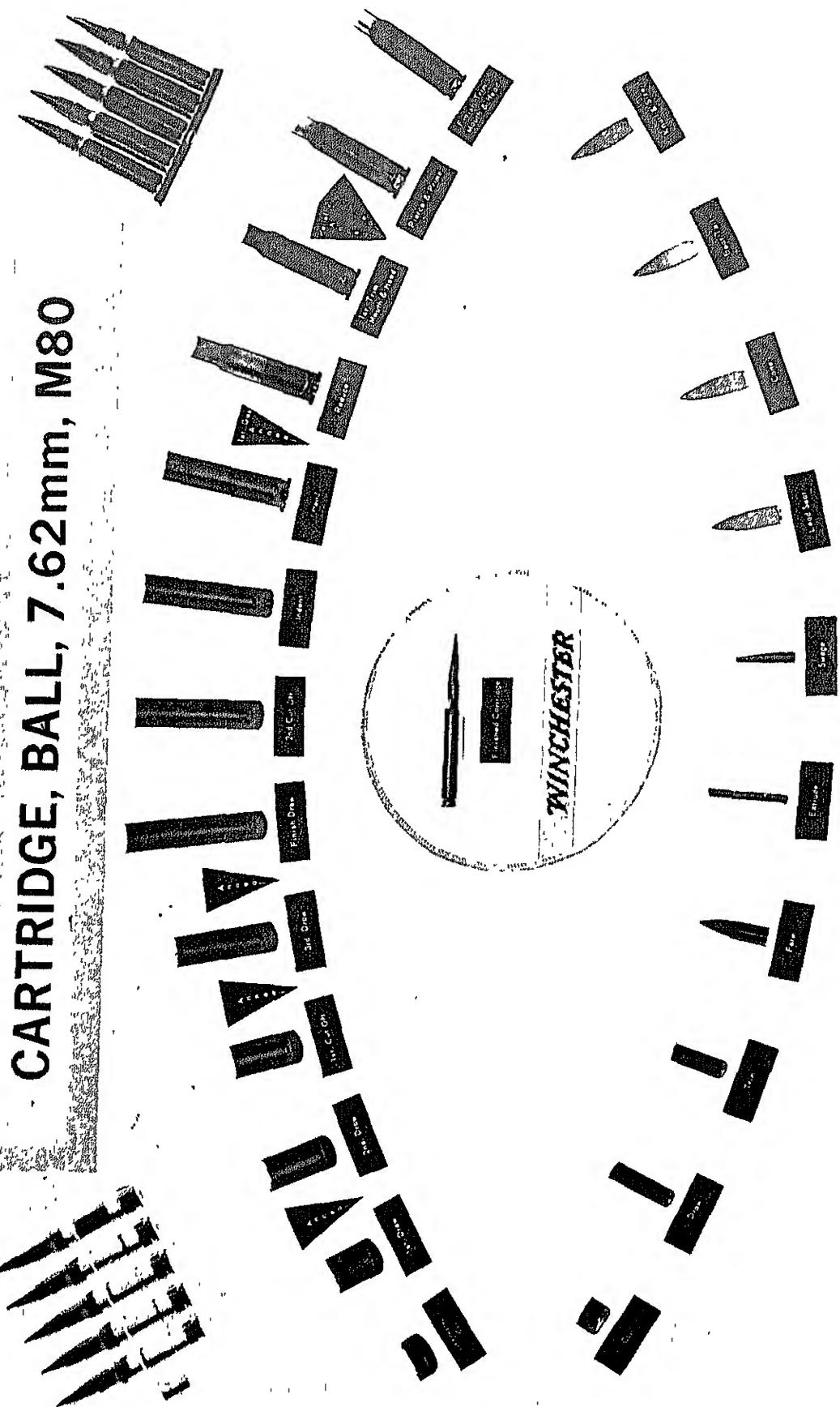
Material	Unit	Quantity	Market Value (\$ Millions)	Date Introduced
Bauxite, metallurgical	ST	5,400,000	\$ 71.1	H.R. 7185* 3-14-67
Castor oil	LB	46,000,000	8.8	H.R. 15862 3-11-68
Corundum	ST	1,950	.2	H.R. 15861 3-11-68
		Total	\$ 80.1	
		Total Value Legislative bills pending	<u>\$188.4</u>	

* Private bill introduced by Congressman C. H. Wilson of California. No action taken.



Cold rolling brass strip on a four-high tandem mill.

CARTRIDGE, BALL, 7.62mm, M80



Successive steps in the production of small arms ammunition.

Aluminum

Sales commitments of primary aluminum under the November 1965 long-term producers purchase agreements were far below expectations, amounting to 31,212 short tons, valued at \$15.5 million. This was a marked improvement, however, over the sale of 2,041 short tons of aluminum for \$1.0 million during July-December 1967, but still below the disposal of 43,711 short tons for a return of \$21.7 million registered in the January-June period of 1967. Supplies of aluminum were adequate throughout the report period, although strikes and threat of strikes against producers created some uncertainty about the continuing availability of supplies. Precautionary inventory building was evident but restrained. As of the end of the report period, cumulative sales since the beginning of the sales program in November 1965 amounted to 434,258 short tons, valued at \$214.0 million, leaving 1,015,827 tons to be taken under the long-term agreements worked out with the six major domestic primary producers and one Canadian producer whereby the excess aluminum in the stockpile is to be purchased at the current market price over a period of years.

Castor oil

Under procedures set forth in the Federal Register in 1962, sales of castor oil are restricted to no more than approximately 30 million pounds per year with offerings at intervals of no less than 60 days. Sales of 32.4 million pounds, valued at \$6.5 million, were reached in early February and under existing regulations further sales had to be discontinued until July 1. The market for castor oil has continued strong and indications are that two additional offerings of five million pounds each could have been absorbed during the four-month suspended sales period. To obtain relief from the restrictive regulation, GSA has broadened the disposal plan embodied in the legislative request submitted to the Congress in August 1967, for the release of an additional 46 million pounds of surplus castor oil in the National Stockpile. This bill is still pending consideration by the House Armed Services Committee. Since sales

were started in August 1962, approximately 133.7 million pounds of castor oil, valued at \$21.3 million, have been sold.

Cobalt

Sales of cobalt showed considerable strength during the report period totaling 3.0 million pounds, valued at \$5.0 million. Under the terms of the disposal program operative at the beginning of January, approximately two million pounds of cobalt were available for off-the-shelf sale through June. These sales were completed in March. After consultation with interested Government agencies and commercial concerns, and with the approval of OEP, GSA effected a change in the program providing for sealed-bid offerings of one million pounds per quarter beginning in April 1968. Total sales of cobalt in fiscal year 1968 amounted to 5.0 million pounds, valued at \$8.6 million, bringing the cumulative total since the inception of the 25 million pound release from the DPA inventory in August 1966, to 10.5 million pounds, valued at \$17.5 million.

Lead

Lead disposals gained momentum in the January-June period—amounting to 26,656 short tons, valued at \$7.8 million—and the quantity of 150,000 tons of lead authorized for commercial sale under PL 89-9, enacted April 2, 1965, became exhausted. However, 46,847 tons remain available against the 50,000 tons Congress authorized for Government programs as a part of PL 89-9. As of June 30, 1968, the total excess of lead was 1,164,832 short tons. Any further release of stockpile lead for commercial sale will require Congressional approval.

Platinum

The platinum supply has remained critically tight all through the year with dealer prices soaring from \$175 per ounce in August to nearly \$300 in late June 1968. The two major platinum producers, however, held prices at \$109-\$114 per ounce from August to July 1, 1968, when increases of \$11 per ounce were announced by producers bringing the price to \$120-\$125. In February 1967, GSA submitted proposed legislation to the Congress request-

ing the release of 115,000 ounces of excess platinum from the National Stockpile. Legislation (H.R. 5789) approved by the House on December 14, 1967, was amended by the Senate on April 26, 1968, to require all sales to be made under competitive bid procedure. In view of the highly speculative market, sales on a competitive bid basis could be disruptive and as of June 30, the Senate-amended version of the bill was pending further consideration before the House Armed Services Committee.

Rubber

In response to pressures generated by the international rubber situation, the Government adjusted the rate of disposals effective June 1967 from 120,000 long tons annually to the higher of actual Government-use or 70,000 long tons annually. Sales from January through June amounted to 33,065 long tons at a value of \$11.7 million. The 70,000 long tons of rubber sold during fiscal year 1968 brought a return to the Government of \$26.1 million. The rubber market was more limited this report period as indicated by the fact that 59,958 long tons of rubber sold during January-June 1967 realized \$27.0 million for the Government. All sales in this report period and the one preceding were for Government-use programs, including DOD truck and aircraft tires, retreading and foreign AID programs. Estimates of future Government requirements for rubber make it quite probable that commercial sales of rubber will continue to be preempted under the revised disposal program.

Silver

June 24, 1968, marked the anniversary of the enactment of the Silver Certificate Act of 1967, Public Law 90-29. On that date, the Secretary of the Treasury terminated the redemption of outstanding silver certificates for silver metal. The certificates nonetheless retain their monetary value. On June 25, the Secretary transferred to the National Stockpile inventory 165 million troy ounces of silver of .999 fineness. In order to reserve sufficient quantities of the higher quality silver, the sealed-bid sales which GSA carried out beginning August 4, 1967, as agent for the Treasury Department were altered from time to time to emphasize sales of .996 to .998 fineness

silver and coinage silver of .897 to .900 fineness. The last sale of .999 fineness silver by GSA took place April 19. During the report period, 54.6 million troy ounces of silver were sold at a value of \$111.5 million. Since the inception of the sealed-bid sales (August 4, 1967), a total of 97.7 million troy ounces has been sold with a gross of \$188.8 million realized from the weekly offerings as of June 30, 1968.

Tin

Sales of Government tin were the lowest for any six-month period since disposals were inaugurated in August 1962, totaling only 1,860 long tons. Of this total, 1,825 tons were for Government-use programs, leaving only 35 tons for commercial sales. Due to the ample supply and depressed international market, no commercial sales were realized by GSA in 21 of the last 26 weeks. Total sales for FY 1968 amounted to 3,435 tons, valued at \$11.6 million, as against 11,723 tons, valued at \$40.5 million, for the previous fiscal year. Effective July 1, 1968, GSA announced commercial sales would be discontinued until about September 30, pending a Government review of methods for disposing of tin.

Tungsten

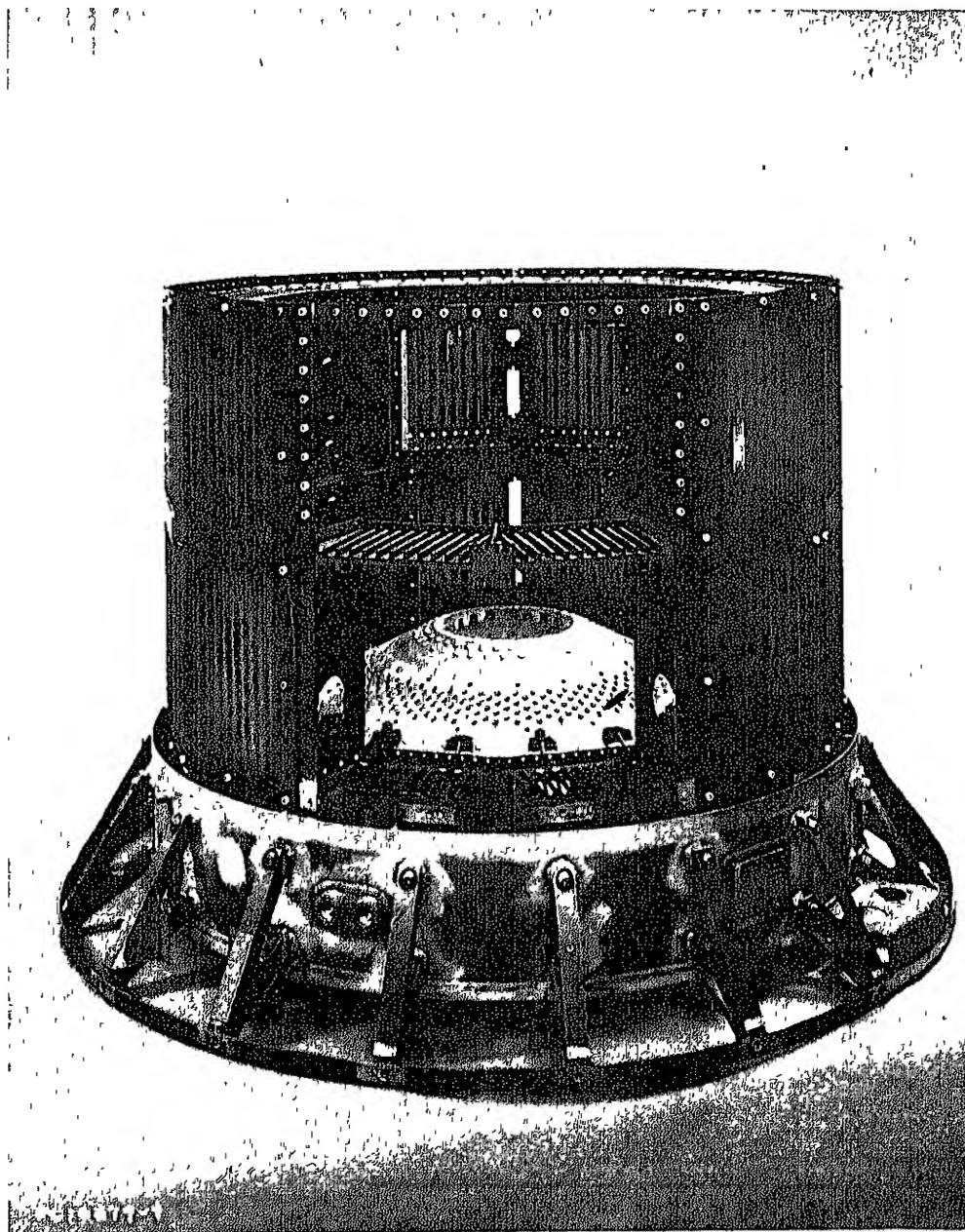
Uncertainties over the supply situation throughout the world and the working down of consumers' inventories contributed sporadically to the demand for tungsten. Total sales of tungsten for the six months amounted to 2.1 million pounds, valued at \$5.3 million, compared with 1.0 million pounds, valued at \$2.6 million in the previous six months, and 5.4 million pounds, valued at \$13.3 million in the first half of calendar year 1967.

Zinc

Sales of zinc during the period reached a level of 18,193 tons, valued at \$4.9 million, of which 16,135 tons were sold to Indian firms under the AID program and 2,058 tons to domestic firms. In the July-December 1967 period, 11,337 tons of zinc had been delivered to India under a \$5.0 million sale of 21,489 tons entered into in November 1967 and completed in June 1968. In March 1968, arrangements were made to supply India with another 6,100 tons with deliveries completed early in June. Because of the restrictive legislative history with respect to the disposal of zinc,

AID transactions must be treated as commercial sales and may be made only after consultation with the domestic zinc producers and notification of appropriate Congressional committees. In May 1968, India inquired whether an additional 14,000 tons, valued at approximately \$4.0 million, could be made available. After several discussions, industry

advised GSA on July 2, 1968, that it would have no objection to the Government supplying the zinc to India under the AID program. As of June 30, there remained 46,273 tons of excess zinc authorized for commercial sale under PL 89-322, and 42,593 tons of excess zinc available for transfer to Government agencies under PL 89-9.



Magnesium navigation guidance and computer chassis used in all Minuteman I missiles. Minuteman II also utilizes magnesium equipment housings.

ACTIVITIES OF THE GENERAL SERVICES ADMINISTRATION RELATING TO STOCKPILING OF STRATEGIC AND CRITICAL MATERIALS

The General Services Administration is charged with the general operating responsibility, under policies set forth by OEP, for stockpile management, including (1) purchasing and making commitments to purchase, transferring, rotating, upgrading, and processing of metals, minerals, and other materials; (2) expansion of productive capacity through the installation of additional equipment in Government-owned plants and the installation of Government-owned equipment in privately-owned facilities; (3) storage and

maintenance of all strategic materials held in Government inventories; and (4) disposal of excess stockpile materials, including the development of disposal plans, selling the materials and providing for Government-use of such materials.

The activities of the General Services Administration particularly in connection with procurement, upgrading, and disposals have been summarized in the earlier sections of this report.

STORAGE AND MAINTENANCE

On June 30, 1968, approximately 47.1 million tons of strategic materials were stored at 143 locations, as follows:

Type of Facility	As of June 30, 1968	Change in last 6 months
Military depots -----	36	
GSA depots -----	30	
Other Government-owned sites -----	16	
Leased commercial sites --	14	
Industrial plantsites ---	39	
Commercial warehouses ...	8	-1
TOTAL -----	143	-1

A total of 414,000 tons was shipped from depots during the report period. This compares with 270,000 tons shipped during the previous 6-month period, making a total of 684,000 tons shipped during fiscal year 1968. Plans were approved to evacuate some of the warehouses and all of the tank farm at the GSA depot at Hammond, Indiana, and to in-

activate the warehouse at Bethlehem, Pennsylvania. When the warehouses at these facilities are inactivated, annual savings of over \$335,000 will be realized.

A total of 8,500 tons of rubber and cordage fiber was removed from commercial warehouses, thus reducing annual storage cost by \$68,000.

ACTIVITIES OF THE DEPARTMENT OF COMMERCE RELATING TO STOCKPILING OF STRATEGIC AND CRITICAL MATERIALS

RESPONSIBILITIES

The Department of Commerce has been delegated a number of responsibilities with regard to the National Stockpile and these in turn have been assigned to the Business and Defense Services Administration within the Department. BDSA prepares for the Office of Emergency Planning estimates of essential civilian and war-supporting requirements for strategic materials in a mobilization period, a basic element in determining stockpile objectives. In certain limited cases, it also prepares estimates of the mobilization supply of such materials. It reviews plans for disposal of surplus stockpile materials and provides OEP or GSA with its evaluation of the market impact of proposed schedules of sales. In addition, it develops recommendations in the matters of purchase specifications and storage procedures. It also prepares special studies for OEP regarding strategic material problems and, in general, submits to OEP on behalf of the Department of Commerce recommendations or advice on stockpile policies and programs.

ESSENTIAL CIVILIAN AND WAR-SUPPORTING REQUIREMENTS

The program for reviewing estimates of mobilization requirements of all stockpile items, which was initiated in the latter part of 1967, proceeded actively during the first six months of 1968. In this period, BDSA completed and sent to OEP studies of 43 stockpile materials. Completion of 16 such studies in the previous period plus participation with OEP in the aluminum and copper studies and an analysis of rhodium, a nonstockpile item, raised the total reviewed to 62 in number. Of the sixteen stockpile items remaining to be reviewed, ten studies are actively under way, three are being held for more information and three will be scheduled shortly. In most cases, requirements showed an increase over those formerly established reflecting, in part, the growth in the economy and in part the result of technological developments.

Completed studies included the following:

Abaca	Mica block,
Aluminum oxide	muscovite
Antimony	Mica block,
Asbestos, amosite	phlogopite
Asbestos, chrysotile	Mica film,
Bauxite,	muscovite
metallurgical grade, Jamaica	Mica splittings, muscovite
Bauxite, metallurgical grade, Surinam	Mica splittings, phlogopite
Bauxite, refractory grade	Nickel
Bismuth	Platinum
Castor oil	Quinidine
Chromite, refractory grade	Quinine
Columbium	Rubber
Fluorspar, acid grade	Selenium
Iridium	Shellac
Kyanite-Mullite	Silicon carbide
Lead	Silver
Magnesium	Sisal
Manganese ore, chemical type A	Tannin, chestnut
Manganese ore, chemical type B	Tannin, quebracho
Manganese, synthetic dioxide	Tannin, wattle
	Tantalum
	Thorium
	Tin
	Tungsten
	Zinc

DISPOSAL PROGRAM

During 1966 and 1967, GSA rearranged a number of long-range disposal programs for stockpile surpluses so that the date of most of the program years would coincide with the standard fiscal year ending on June 30. Thus, the annual review of the programs and preparation of recommendations for the succeeding year have been concentrated in the last quarter of the fiscal year. Because of this, BDSA has been unusually active in providing GSA with comments on disposal plans during the last two months of the fiscal year. In this respect, plans covering 30 materials were reviewed in May and June, and during the first six months of the year, 84 items were covered. Those reviewed included the following:

Abaca	Manganese, synthetic dioxide
Aluminum oxide	Molybdenum
Asbestos, amosite	Rare earths
Asbestos, chrysotile	Quartz crystal
Asbestos, crocidolite	Shellac
Castor oil	Sisal
Celestite	Talc Block
Chromite, chemical grade	Talc Ground
Chromite, metallurgical grade	Thorium oxide
Cobalt	Titanium
Columbium-Tantalum concentrates	Vanadium
Diamond stones, industrial	Vegetable tannin, chestnut
Fluorspar, acid grade (2)	Vegetable tannin, quebracho
Graphite, Malagasy	Vegetable tannin, wattle
Graphite, "other"	Zinc
Lead	Zircon
Manganese ore, metallurgical grade	Zirconium ore, baddeleyite

STOCKPILE PURCHASE SPECIFICATIONS AND SPECIAL STOCKPILE INSTRUCTIONS

The program for reviewing and bringing up-to-date all of the 180 purchase specifications and special instructions is continuing at a satisfactory pace. During the period under review, 25 draft revisions were completed, most of which have been forwarded to OEP for approval. The following items were covered:

PURCHASE SPECIFICATIONS

Aluminum	Opium
Bauxite, metal grade	Palladium
Celestite	Silicomanganese
Columbium source materials	Tannin, chestnut
Graphite, Malagasy	Tannin, quebracho
Mica, muscovite block	Tannin, wattle
Mica, muscovite film	Tantalum source materials

SPECIAL INSTRUCTIONS

Aluminum	Mica, muscovite
Bauxite, metal grade	block and film
Celestite	Palladium
Columbium source materials	Platinum
Graphite, Malagasy	Silicomanganese
Iridium	Tantalum source materials

SPECIAL STUDIES AND RELATED ACTIVITIES

From time to time, OEP requests BDSA to prepare reports or studies of special aspects of the stockpiling operation or BDSA on its own initiative submits to OEP analyses and recommendations stemming from technological developments or new problems affecting stockpile calculations. The following was accomplished in this area:

Aluminum.—An analysis of a draft mobilization balance sheet for aluminum and its covering notes was prepared for OEP and suggestions for improvement were submitted to that agency.

Beryl.—Because of indicated supply difficulties for a producer of beryllium metal with defense contracts, BDSA projected for OEP a supply-demand situation for beryl through 1969, taking into account stocks, imports, and prospective defense and civilian requirements. The report included an analysis of various factors contributing to the problem.

Chromite, metallurgical grade.—The current embargo on imports of metallurgical grade chromite from Rhodesia raised a question regarding the adequacy of supply for domestic needs from other sources. BDSA, in conjunction with the Departments of State and the Interior, projected demand through 1969 and related it to scheduled imports and potential shipments. Because other grades of ore are used to a limited extent for metallurgical purposes, it was necessary to identify individual imports and their destination as well as review usage reports of consumers to determine to what extent all grades could be relied upon to meet the metallurgical demand.

Ferroalloys.—The Committee of Producers of Ferroalloys and Related Products requested the Director of OEP to investigate imports of specified ferroalloys to ascertain if such imports were impairing or threatening to impair national security. Under Section 232 of the Trade Expansion Act of 1962, a finding to this effect by the Director could result in a recommendation to the President regarding measures to alleviate the situation.

The OEP Director requested the Secretary of Commerce on June 13, 1968, to assist him in making the investigation and BDSA was assigned responsibility for providing such

assistance. The project will require the assembly of detailed data bearing on the topic, a review and evaluation of defense aspects of the situation, and an analysis of various economic factors which could be affected by such imports. It is expected that several months will be required to complete the project.

Copper.—At the request of OEP, BDSA prepared a detailed analysis of 1965 production and consumption of copper by shape and sizes. The analysis provided tonnages of each category and the percentage of each category in relation to the total. It also gave a breakdown of production into the individual sizes

of each of the major shapes. The information so obtained will be used, in conjunction with other data, to revise instructions regarding the forms of copper to be maintained in the National Stockpile.

Lists of Processors (Consumers) Stockpile Items.—As part of a program for updating lists of processors and/or consumers of stockpile items together with the addresses and capacities of each plant, BDSA assembled and submitted to OEP revised lists of processors of quinine sulphate and quinidine sulphate. The report included comments on special aspects of the listing.

ACTIVITIES OF THE DEPARTMENT OF STATE RELATING TO STOCKPILING OF STRATEGIC AND CRITICAL MATERIALS

The Department of State provides advice and guidance regarding the effects of stockpiling program activities on U.S. foreign relations, and deals with problems in this area which may arise out of these activities. The Department participates with other agencies in the periodic review of the supply and demand situation for each of the stockpiled materials and in the development of related stockpile objectives. The Department provides the estimate of reliability of foreign sources of supply in time of national emergency.

In regard to the disposal of surplus materials from the stockpile, the Department shares in the development of disposal plans suited to the particular situation in each material and conducts consultations with interested foreign governments regarding each plan. Based on these consultations, an evalua-

tion is made of the political and economic effects of disposals on friendly foreign countries and on foreign relations of the United States. As necessary, recommendations are made for the adoption or modification of the proposed disposal plans. The Department participates in the review of proposals in case of barter of U.S. surplus agricultural products involving strategic materials, and assists in advising the Department of Agriculture on foreign policy problems arising from the conduct of barter programs.

In the period January-June 1968, the Department received and responded to representations from several foreign governments regarding on-going disposal programs, received a number of disposal programs with a view to their continuation into the next fiscal year, and initiated consultations with interested governments on some of these.

ACTIVITIES OF THE DEPARTMENT OF AGRICULTURE RELATING TO THE STOCKPILING OF STRATEGIC AND CRITICAL MATERIALS

COTTON TRANSFERRED FROM STOCKPILE FOR DISPOSAL

In 1962 the General Services Administration transferred all National Stockpile extra-long staple domestic and foreign-grown cotton to the Commodity Credit Corporation. This involved about 123,000 bales (running) of Egyptian and Sudanese cotton which was disposed of through an export sales program.

The GSA transfer to CCC also involved 47,518 bales of domestic cotton which were added to the CCC inventory, making a total of 53,740 bales. Sales of this cotton have been for unrestricted use. Cumulative sales through June 30, 1968, were 24,431 bales, leaving an inventory of 29,309 bales.

BARTER ACTIVITIES

No barter contracts for strategic materials for stockpile purposes were signed during January-June 1968. During this period, strategic materials valued at \$5.7 million were delivered to Commodity Credit Corporation under contracts signed prior to January-June 1968, bringing the cumulative total of deliveries to CCC since 1950 to approximately

\$1.6 billion. Of this total, through June 30, 1968, \$228.8 million in strategic materials have been transferred to the National Stockpile and about \$1.4 billion to the Supplemental Stockpile.

The 90th Congress, in further amending the Agricultural Trade Development and Assistance Act of 1954 (PL 83-480 as amended), amended Section 303 of the Act to limit barter under clause (a) to exchanges of materials which originate in the country to which the agricultural commodities are exported. The conferees, in reporting this amendment, which is contained in Public Law 90-436, made it clear that there was no intent to alter or change the Secretary of Agriculture's barter authority under the Commodity Credit Corporation Charter Act.

The Department of Agriculture continued its policy that materials for stockpiling will generally be acquired through barter of agricultural commodities only when the Commodity Credit Corporation can be reimbursed for those materials by funds appropriated to the agency responsible for National Stockpile procurement. No such arrangements were transacted during FY 1968.

ACTIVITIES OF THE DEPARTMENT OF THE INTERIOR RELATING TO STOCKPILING OF STRATEGIC AND CRITICAL MATERIALS

The Department of the Interior is responsible for the management, conservation, and development of the Nation's natural resources to meet the requirements of national security and an expanding economy. The Department provides advice and assistance to the Office of Emergency Planning in formulating and carrying out programs for the stockpiling of strategic and critical materials. The Department also conducts research in exploration, mining, beneficiation, and metallurgy and compiles information on production and consumption for use in stockpile planning.

The Department is responsible for emergency preparedness planning with respect to strategic metals and minerals and other re-

sources and conducts supply-requirements studies when market conditions or other circumstances indicate problem areas in which materials are likely to be in short supply and recommends appropriate action to overcome deficiencies. The Department also administers programs to encourage the exploration, development, and mining of minerals and metals for emergency purposes.

STOCKPILE DISPOSALS

The Department continued to cooperate in the formulation of programs for the disposal of surplus Government inventories of strategic and critical materials. Substantial inter-agency progress was made in the development

of disposal plans and emergency releases to meet industrial and military requirements. Representatives of the interested industries were consulted in the early stages of the programs.

RUTILE RESEARCH PROGRAM

Under the Domestic Rutile Expansion Program established by the Office of Emergency Planning, the Bureau of Mines and the Geological Survey each published a report on potentially minable deposits of rutile in South Carolina and Colorado. The Bureau of Mines continued to provide engineering assistance to firms developing processes to make substitutes for natural rutile from ilmenite, which is abundant in the United States, and to evaluate the extent to which alternate titaniferous materials could be used in strategic applications in place of natural rutile in a defense emergency.

A potentially important source of rutile was discovered near Snyder Gulch, northwest of Evergreen, Colorado, by field and laboratory studies conducted on the Geological Survey's Rutile Test Program under the Department of the Interior's Rutile and Titaniferous Materials Development Program.

RESOURCE DEVELOPMENT

Known resources of high-temperature refractory raw materials in the Pacific Northwest were substantially increased by the completion of field and laboratory studies of kyanite group mineral deposits and a determination made of their potential for producing mullite-forming materials.

Information on uranium resources from all known sources was collected during the year and the data on occurrences, geology, reserves, exploration technology, markets, and problems were collated and evaluated to determine the availability of uranium at various price levels, and the study of domestic availability

of antimony and bismuth resources was continued.

Investigation of the cupriferous "Red Beds" of Permian age outcropping in Texas, Oklahoma, and Kansas was initiated to determine the resource potential for copper, silver, gold, and other metals. Evaluation of copper deposits according to amenability to exploitation by nuclear energy and leaching continued as a major resource activity.

RESEARCH ACTIVITY

The solution of problems encountered in the electrowinning of titanium, hafnium, vanadium and aluminum from their chlorides and beryllium from its oxide in molten salt electrolytes progressed during the period. A potentially commercial process for preparing high-purity (99.99 percent) vanadium metal was developed and byproduct vanadium was successfully extracted from 30 percent phosphoric acid. Further improvement was obtained in the solvent extraction process for recovering high-purity alumina from porphyry-mine dump leach liquors.

Investigation of the supply potential of secondary materials from various sources of scrap was a major metallurgical research activity. Process development studies to recover reusable nickel, cobalt, molybdenum, and tungsten products from refractory metal manufacturing scrap were essentially completed. Intermetallic compound studies were continued toward removal of tin, arsenic, antimony, copper, and nickel from molten scrap steel. Rapid progress was made on development of continuous mechanical methods for separating wet incinerator residues into fractions suitable for further metallurgical processing and refining and thus utilize the growing reservoir of solid waste accumulations.

Special and technical reports, issued during January-June 1968, having a relationship to strategic and critical materials are as follows:

BUREAU OF MINES

Reports of Investigation

7068 Methods for Producing Alumina From Anorthosite. An Evaluation of a Lime-Soda Sinter Process

7070 New England Beryllium Investigations

7079 Recovery of Alumina and Iron From Pacific Northwest Bauxites by the Pedersen Process

7081 Liquidus Temperatures of Titaniferous Slags (in Three Parts).
1. $TiO_2-Al_2O_3-SiO_2-CaO-MgO$

7082 An Electrolytic Process for Separating Nickel and Cobalt

7083 Liquidus Temperatures of Titaniferous Slags (in Three Parts).
2. $TiO_2-Al_2O_3-FeO-SiO_2-CaO-MgO$

7088 Low-Temperature Chlorination of Ferrochromium. Preliminary Studies

7089 Evaluation of Rolling Slabs of Zinc-Copper-Titanium Alloys Cast under Semicontinuous Conditions

7096 Determination of the Heat of Formation of Vanadium Trichloride

7100 Extraction Behavior of Cerium-Group Lanthanides in a Primary Amine-Chelating Agent System

7106 A High-Temperature, Two-Phase Extraction Technique for Tungsten Minerals

7112 Chromium by Thermal Decomposition of Bisbenzene Chromium

7113 Effects of Boron and of Boron With Carbon on the Mechanical Properties of Vanadium

7116 Study of Columbium and Tantalum Alloys

7117 Silver Recovery From Waste Photographic Solutions by Metallic Displacement

7118 Tungsten Whiskers by Vapor-Phase Growth

7119 Nonpyritic Smelting of Copper Concentrates

7123 Recovery of Cerium and Lanthanum by Ozonation of Lanthanide Solutions

7126 Oxidation of Lead Blast Furnace Matte by Ferrobacillus Ferrooxidans or a Dilute Acid Solution

7130 Application of Filiform Tungsten to Reinforce Metals

7134 Heavy Liquid Cyclone Concentration of Minerals (in Two Parts). 2. A Study of Liquid Cyclone Concentration of Various Mineral Systems

7138 Effect of Ammonia in Cyanide Solution on Copper Extraction From a Michigan Ore

7145 High-Purity Vanadium by Metallothermic Reduction of Vanadium Trichloride

7146 Direct Electrolysis of Rare-Earth Oxides to Metals and Alloys in Fluoride Melts

7152 Conversion of Tungsten Oxychloride to Tungsten Hexachloride by Chlorination

Information Circulars

8341 Copper Leaching Practices in the Western United States

8359 Magnetic Susceptibility of 34 Manganese-Bearing Minerals

8860 Magnetic Susceptibility of Group IVB, VB, and VIB Metal-Bearing Minerals

8368 Review of Major Proposed Processes for Recovering Manganese From United States Resources (in Three Parts). 3. Sulfur Oxide Processes

8370 Study of the Silver Potential, Creede District, Mineral County, Colo.

8383 Magnetic Susceptibility of Copper-, Lead-, and Zinc-Bearing Minerals

Journal Articles

OP 187-67 Infrared Studies of Products of the Reaction Between Activated Zinc Sulfide and Potassium Ethyl Xanthate

OP 197-67 Extracting Alumina From Silicates by Melting, Quenching, and Sulfuric Acid Leaching

OP 3-68 A Preliminary Study of Vapor Deposition of Rhenium and Rhenium-Tungsten

OP 24-68 High-Purity Vanadium

OP 33-68 A Comparison of Five Spectrochemical Methods for the Analysis of High Purity Zinc
 OP 34-68 The Production of Primary Titanium Metal
 OP 36-68 High-Purity Titanium Electrowon From Titanium Tetrachloride
 OP 48-68 Byproduct Uranium Recovered With New Ion Exchange Techniques
 OP 53-68 Electrowinning of Niobium
 OP 57-68 Phase Relations in the Niobium-Gallium System

U.S. GEOLOGICAL SURVEY

Professional Papers

297-F Geology of the Berne quadrangle, Black Hills, South Dakota, by Jack A. Redden (mica, gold, beryl, columbite-tantalite, lithium).
 568 Fluvial monazite deposits in the Southeastern United States, by W. C. Overstreet, A. M. White, J. W. Whitlow, P. K. Theobald, Jr., D. W. Caldwell, and N.P. Cuppels, *with a section on Mineral Analyses*, by Jerome Stone (rare earths).
 577 Mica deposits of the Blue Ridge in North Carolina, by F. G. Lesure.
 580 Mineral resources of the Appalachian Region, by the U.S. Geological Survey and the U.S. Bureau of Mines (various metallic and nonmetallic commodities).
 594-C Silver-rich disseminated sulfides from a tungsten-bearing quartz lode, Big Creek district, central Idaho, by B. F. Leonard, C. W. Mead, and Nancy Conklin.
 600-B Geological Survey Research 1968 (short papers on analytical methods and related subjects).

Bulletins

1239 Geology, altered rocks, and ore deposits of the San Rafael Swell, Emery County, Utah, by C. C. Hawley, R. C. Robeck, and H. B. Dyer (uranium, vanadium, copper).
 1242-F Geochemical cycle of selected trace elements in the tin-tungsten-beryllium district, western Seward Peninsula, Alaska—A reconnaissance study, by C. L. Sainsbury, J. C. Hamilton, and Claude Huffman, Jr.

Circulars

553 Silver in veins of hypogene manganese oxides, by D. F. Hewitt.
 557 Lead, copper, molybdenum, and zinc geochemical anomalies south of the Summitville district, Rio Grande County, Colorado, by W. N. Sharp and J. L. Gaultieri.
 559 Lead, zinc, and silver deposits at Bowser Creek, McGrath A-2 quadrangle, Alaska, by B. L. Reed and R. L. Elliott.
 560 U.S. Geological Survey Heavy Metals Program Progress Report (gold, silver, mercury, platinum group metals).
 565 Cassiterite in gold placers at Humboldt Creek, Serpentine-Kougarok area, Seward Peninsula, Alaska, by C. L. Sainsbury, Reuben Kachadoorian, Thomas E. Smith, and William C. Todd.
 567 Rutile and topaz in Precambrian gneiss, Jefferson and Clear Creek Counties, Colorado, by Douglas M. Sheridan, Richard B. Taylor, and Sherman P. Marsh.

569 Geochemical anomalies and metalliferous deposits between Windy Fork and Post River, Southern Alaska Range, by Bruce L. Reed and Raymond L. Elliott (copper, lead, zinc, silver, gold).

570 Suggested areas for prospecting in the central Koyukuk River region, Alaska, by Thomas P. Miller and Oscar J. Ferrians, Jr. (copper, lead, zinc, silver, gold).

589 Distribution of gold, silver, and other metals near Gold Acres and Tenabo, Lander County, Nevada, by Chester T. Wrucke, Theodore J. Armbrustmacher, and Thomas D. Hessin (gold, silver, lead, copper).

Maps

MF-301 Map of southwestern Maine showing heavy metals in stream sediments, by E. V. Post, W. L. Lehmbeck, W. H. Dennen, and G. A. Nowlan (zinc, copper, lead, cobalt).

EXPENDITURES OF STOCKPILE FUNDS, BY TYPE (for the National Stockpile)

Cumulative and for Second Half Fiscal Year 1968

Type of Expenditure	Cumulative Through December 31, 1967	Six Months Ended June 30, 1968	Cumulative Through June 30, 1968
Expenditures			
Gross Total	\$6,480,322,308	\$8,627,960	\$6,488,950,277
Less: Receipts from Rotation Sales and Reimbursements	544,594,500	387,452	544,981,952
Net Total	5,935,727,808	8,240,517	5,948,968,325
Materials Acquisition Costs, Total	5,438,664,675	448,821	5,439,108,496
Stockpile Maintenance Costs, Total	424,015,507	5,539,374	429,554,881
Facility Construction	43,772,457	—	43,772,457
Storage and Handling Costs	277,492,605	5,539,401	283,032,066
Net Rotation Costs	102,750,885	-27	102,750,858
Administrative Costs	61,907,372	1,732,400	63,639,772
Operations, Machine Tool Program	11,140,254	524,922	11,665,176

Cumulative figures are the total of expenditures under PL 117, 76th Congress and PL 520, 79th Congress. Expenditures under PL 117 totaled \$70,000,000 of which \$55,625,237 was for materials acquisition costs and \$14,374,763 was for other costs. Final expenditures under PL 117 were made in FY 1961.

Source: General Services Administration

TOTAL OBLIGATIONS AND EXPENDITURES OF STOCKPILING FUNDS
Under PL 117 and PL 520 for THE NATIONAL STOCKPILE
CUMULATIVE AND BY FISCAL PERIOD THROUGH JUNE 30, 1968

Fiscal Period	OBLIGATIONS INCURRED ^A		EXPENDITURES ^B	
	Net Change by Fiscal Period	Cumulative As of End of Period	By Fiscal Period	Cumulative As of End of Period
Prior to Fiscal Year 1948	\$ 123,871,685	\$ 123,871,685	\$ 66,330,731	\$ 66,330,731
Fiscal Year 1948	252,901,411	376,773,096	82,907,576	149,238,306
Fiscal Year 1949	459,766,881	836,539,977	804,486,177	453,724,483
Fiscal Year 1950	680,427,821	1,516,967,798	440,834,970	894,559,453
Fiscal Year 1951	2,075,817,099	3,592,284,897	655,537,199	1,550,096,652
Fiscal Year 1952	948,117,547	4,540,402,444	844,683,459	2,394,780,111
Fiscal Year 1953	252,875,168	4,792,777,607	906,158,850	3,300,938,961
Fiscal Year 1954	116,586,681	4,909,364,288	644,760,321	3,945,699,282
Fiscal Year 1955	821,799,883	5,231,164,121	801,310,094	4,747,009,876
Fiscal Year 1956 ^c	251,692,667	5,482,856,788	382,011,786 ^c	5,129,021,162 ^c
Fiscal Year 1957	100,000,109	5,672,856,897	354,576,558	5,483,597,720
Fiscal Year 1958	54,478,250	5,727,330,147	173,753,997	5,657,351,717
Fiscal Year 1959	88,710,879	5,766,041,026	65,260,098	5,722,611,815
Fiscal Year 1960	19,859,290	5,785,900,316	49,227,142	5,771,838,957
Fiscal Year 1961	29,082,919	5,814,983,235	83,325,481	5,805,164,388
Fiscal Year 1962	31,179,407	5,846,162,642	83,695,481	5,888,859,819
Fiscal Year 1963	17,414,900	5,863,577,542	22,104,176	5,860,063,995
Fiscal Year 1964	15,489,597	5,879,067,139	16,091,067	5,877,055,062
Fiscal Year 1965	16,288,732	5,895,855,871	16,561,275	5,893,616,837
Fiscal Year 1966	16,296,070	5,911,651,941	16,468,100	5,910,084,437
Fiscal Year 1967	18,197,410	5,929,849,351	17,981,675	5,928,066,112
Fiscal Year 1968	16,008,237	5,945,857,588	15,902,213	5,943,968,325

^A Figures are the sum of obligations incurred under PL 520, 79th Congress and PL 117, 76th Congress. Final obligations under PL 117, 76th Congress were incurred in Fiscal Year 1949.

^B Figures are the sum of expenditures under PL 520, 79th Congress and PL 117, 76th Congress. Final expenditures under PL 117, 76th Congress were made in Fiscal Year 1951.

^c 1966 and subsequent fiscal periods and cumulative expenditures are reported on an accrual basis.

Source: General Services Administration

STATUS OF OBLIGATIONAL OPERATIONS

Under PL-117 and PL-520

As of June 30, 1968

AUTHORITY	AUTHORIZATIONS FOR			OBLIGATIONAL AUTHORITY (CUMULATIVE) ^d
	APPROPRIATED FUNDS ^a	ADVANCE CONTRACTS ^b	LIQUIDATING ADVANCES ^c	
Under PL-117—76th Congress				
PL-361—76th Congress, August 9, 1939	\$ 10,000,000	\$	\$	\$ 10,000,000
PL-442—76th Congress, March 25, 1940	12,500,000			22,500,000
PL-667—76th Congress, June 26, 1940	47,500,000			70,000,000 ^e
Under PL-520—79th Congress				
PL-663—79th Congress, August 8, 1946	100,000,000	—	—	100,000,000
PL-271—80th Congress, July 30, 1947	100,000,000	75,000,000	—	275,000,000
PL-785—80th Congress, June 25, 1948	225,000,000	300,000,000	—	800,000,000
PL-785—80th Congress, June 25, 1948	75,000,000	—	75,000,000	800,000,000
PL-119—81st Congress, June 23, 1949	40,000,000	270,000,000	—	1,110,000,000
PL-150—81st Congress, June 30, 1949	275,000,000	250,000,000	—	1,635,000,000
PL-150—81st Congress, June 30, 1949	250,000,000	—	250,000,000	1,635,000,000
PL-434—81st Congress, October 29, 1949	—	—	100,000,000 ^f	1,535,000,000
PL-759—81st Congress, September 6, 1950	365,000,000	—	240,000,000	1,660,000,000
PL-759—81st Congress, September 6, 1950	240,000,000	125,000,000	—	2,025,000,000
PL-843—81st Congress, September 27, 1950	573,232,449 ^g	—	—	2,598,232,449
PL-911—81st Congress, January 6, 1951	1,834,911,000	—	—	4,433,143,449
PL-253—82nd Congress, November 1, 1951	590,216,500	—	—	5,023,359,949
PL-253—82nd Congress, November 1, 1951	200,000,000	—	200,000,000	5,023,359,949
PL-455—82nd Congress, July 25, 1952	203,979,000	—	70,000,000	5,157,338,949
PL-176—83rd Congress, July 31, 1953	—	—	30,000,000	5,127,338,949
PL-428—83rd Congress, June 24, 1954	—	—	27,600,000	5,099,738,949
PL-663—83rd Congress, August 26, 1954	379,952,000 ^h	—	—	5,479,690,949
PL-112—84th Congress, June 30, 1955	321,721,000 ⁱ	—	—	5,801,411,949
PL-112—84th Congress, June 30, 1955	27,400,000	—	27,400,000	5,801,411,949
PL-844—85th Congress, August 28, 1958	3,000,000	—	—	5,804,411,949
PL-255—86th Congress, September 14, 1959	—58,370,923 ^j	—	—	5,746,041,026
PL-626—86th Congress, July 12, 1960	22,237,000 ^k	—	—	5,768,278,026

PL-141—87th Congress, August 17, 1961	16,682,510 ¹	—	5,784,960,536
PL-741—87th Congress, October 3, 1962	8,729,887 ^m	—	5,793,690,423
PL-215—88th Congress, December 19, 1963	23,925,000	—	5,817,615,423 ⁿ
PL-507—88th Congress, August 30, 1964	9,319,168 ^o	—	5,826,934,591
PL-16—89th Congress, April 30, 1965	118,500	—	5,827,053,091
PL-128—89th Congress, August 16, 1965	16,096,284 ^p	—	5,843,149,375
PL-555—89th Congress, September 6, 1966	18,493,789 ^q	—	5,861,643,164
PL-21—90th Congress, May 29, 1967	244,000	—	5,861,887,164
PL-121—90th Congress, November 3, 1967	16,341,212 ^r	—	5,878,228,376
Total PL-117 and PL-520	\$5,948,228,376	\$1,020,000,000	\$5,948,228,376

Source: General Services Administration

- * Congressional appropriations of funds for stockpiling purposes.
- ^b Congressional appropriations of contracting authority for stockpiling purposes in advance of appropriation of funds.
- ^c Congressional authorizations to liquidate outstanding obligations incurred under previously granted advance contract authority.
- ^d Cumulative total of appropriated funds and advance contract authorization, less authorization to liquidate outstanding advance contract.
- ^e Excludes \$8,845,792 received from sale of stockpile materials for wartime consumption. Receipts were returned to Treasury, February 1948.

^f Cancellation of previously authorized authority to make contracts.

- ^g Excludes \$25,404,921 transferred to operating expenses for rehabilitation of Government-owned material producing plants.
- ^h Excludes \$48,000 transferred to Transportation and Public Utilities Service, GSA.
- ⁱ Excludes \$430,000 transferred to Transportation and Public Utilities Service, GSA and \$199,349,000 transferred to General Fund Receipts on June 27, 1956—PL-623—84th Congress.

^j As of June 30, 1959, this amount included cash of \$52,350,792 and receivables of \$6,020,131.

- ^k Excludes \$7,763,000 transferred to other GSA Funds for classified and wage board salary increases during 1961.
- ^l Appropriation of \$40,000,000 of which \$22,700 transferred to Office of Administrator, GSA and \$25,294,790 transferred to General Fund Receipts.

^m Appropriation of \$18,095,000 less transfers to General Fund Receipts of \$9,365,113.

- ⁿ Excludes receipts from rotational sales.
- ^o Appropriation of \$17,755,000 less returns to Treasury of \$8,435,832.
- ^p Appropriation of \$17,400,000 less returns to Treasury of \$1,303,716.
- ^q Appropriation of \$19,847,000 less returns to Treasury of \$1,353,211.
- ^r Stock Piling portion of OE, PMDS appropriation, \$18,712,000, less returns to Treasury of \$2,370,783.